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(54) A rotary regenerative heat exchanger

(57) A rotary regenerative heat exchanger has a cylindrical open ended casing with a heat exchange mass therein having a multiplicity of axially and generally radially extending partitions 16 providing a multiplicity of axial gas flow passages, but substantially precluding circumferential gas flow. A gas feed system includes a pair of axially aligned hoods mounted to overlie corresponding portions only of the ends of the mass to feed a first gas to and from the exchange mass. Ducting overlies the remainder of each axial end of the casing to feed a second gas to and from the heat exchange mass and means are provided to cause relative rotation about the axis of the cylindrical casing between the gas feed system and the casing. Radially extending sealing elements 40, 42, 44, 46 divide the ends of the hoods from the ends of the ducts and have a circumferential extent to overlie at all times of relative rotation at least two adjacent ones of the partitions 16, so that the pressure between these partitions is intermediate the pressures on either side thereof.

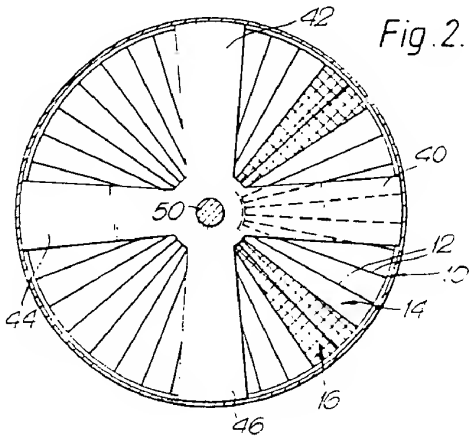

Fig.2.

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C L A I M S

1. A regenerative heat exchanger comprising a generally cylindrical, open-ended casing, a heat exchange mass mounted in said casing, said heat exchange mass including a multiplicity of axially and generally radially extending partitions, circumferentially spaced from one another to provide a multiplicity of axial gas flow passages through the heat exchange mass, but substantially precluding circumferential gas flow, a gas feed system including a pair of axially aligned hoods, mounted to overlie corresponding portions only of the axial ends of said heat exchange mass, to feed a first gas to and from said heat exchange mass, and ducting overlying the remainder of each axial end of the casing to feed a second gas to and from the heat exchange mass, means to cause relative rotation, about the axis of said cylindrical casing, between said gas feed system and the casing, and radially extending fixed sealing elements dividing the ends of the hoods from the ends of the ducts, said radially extending sealing elements having a circumferential extent at all times of relative rotation to overlie at least two adjacent ones of said generally radially extending partitions.

2. A heat exchanger according to claim 1, wherein said casing comprises a plurality of accurately radially extending walls dividing said casing into a plurality of sector-shaped zones, and wherein said heat exchange mass includes a number of radially spaced annular partitions and generally radially extending partitions within each sector-shaped zone.

3. A regenerative heat exchanger according to claim 2, wherein said generally radially extending partitions in any one sector are substantially parallel to one another, and wherein the circumferential extent of said radially extending sealing elements is sufficiently wide to overlie at least two adjacent ones of said parallel partitions and, where appropriate, said radially extending

wall and the adjacent radially extending partition.

4. A heat exchanger according to any preceding claim, wherein the hood at each axial end is in the form of two diametrally opposite, quadrant shaped, portions and the ducting at each axial end is in the form of two further quadrant shaped portions located between said hood portions, said radially extending sealing elements being in the form of four plates extending along directions at right angles to one another.

5. A regenerative heat exchanger according to any one of claims 1 to 3, wherein said hood at each axial end is semi-circular and the ducting at each axial end is semi-circular, the radially extending sealing elements being in the form of a diametral plate including two sector shaped portions.

6. A regenerative heat exchanger according to any preceding claim, wherein the casing is fixed and the gas feed system rotates relative thereto.

7. A regenerative heat exchanger substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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